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## ORIGINAL ARTICLES.

### THE INFLUENCE OF THE FIELD OF VISION IN DETERMINING FOR OR AGAINST A PALLIATIVE OPERATION FOR PAPILLOEDEMA. WITH REPORT OF A CASE.\*

By J. W. CHARLES, M.D.,

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The operation of cranial decompression for the purpose of saving vision or of prolonging life has become so successful and the procedure so simplified and perfected in its refinements that a note of warning should be sounded against too great radicalism, in deciding so serious a question as the advisability of a capital operation. Neurologists often depend entirely upon the decision of the ophthalmologist, who is in a position to detect slight changes in vision (central and peripheral) and in the appearance of the swollen papilla. If there is any other way open to save vision, ophthalmologists will welcome the avoidance of so severe a procedure, especially if the physical condition of the patient renders an unfavorable result probable. Much uncertainty has been expressed by the most experienced about the indications for surgical interference because in some of the most marked cases of choked disc, vision has been little disturbed and on the other hand, in some of the mildest appearing cedemas vision has been totally destroyed. Then again some of the lowest degrees of swelling result in gradual blindness and some of the most violent choked discs, so often seen in brain tumors, may clear

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\*Read at the meeting of the St. Louis Ophthalmological Society June 14th, 1909.

up so that vision becomes practically normal—indeed it is in these latter cases that we find the greatest variations in evidences of pressure.

It was once argued that such an operation was not needed in simple internal hydrocephalus and would be of no avail when the œdema was the result of tumor pressure. It has, however, been shown that some cases of so-called internal hydrocephalus have caused blindness and also that when the pressure from a tumor has been relieved the patient has recovered vision, which remained serviceable until death. Of course in the case of tumor, the sooner localized the better it is for removal, therefore giving the patient a greater chance for recovery. It is a well known fact that a sufficient intracranial pressure masks localizing symptoms and thus the localization of the tumor and its removal are sometimes rendered possible by a decompression. In determining whether to operate immediately or whether to wait for further developments under treatment, one must take into consideration the physical condition of the patient, the rapidity of the onset of the trouble, and the question whether the case is due to a simple internal hydrocephalus or due to a tumor,—and in the latter case its location. After this has been decided as definitely as possible, the choice must be made between a lumbar puncture and a cranial decompression.

Most of the surgeons who have worked with neurologists advocate cranial decompression as soon as possible after they are convinced that medicinal treatment has proven of no avail in diminishing tension.

Most of the pediatricists, I understand, maintain that with lumbar puncture they obtain marked success with a minimum of danger from the operation. However, Spiller last year referred to the fact that von Krüdener had found no effect after lumbar puncture in twelve cases of choked disc caused by tumor, and surgeons and neurologists hold that when the pressure is below the tentorium (which cannot be accurately determined clinically), the bulging against the medulla during escape of fluid from lumbar puncture accounts for the sudden deaths following this comparatively simple procedure, death supervening before a cranial decompression can be performed. It is precisely in these cases that the differentiation of simple internal hydrocephalus from that caused by tumor is most difficult because those tumors which produce internal hydrocephalus are almost always tumors of the posterior fossa.

The following case shows the need of daily ophthalmoscopic examinations, in cases where central disturbance is suspected, and the efficiency of the medicinal (internal or inunction) treatment:

Orr D., 5 years old, came to me January 23rd, 1907. He had had occasional headaches with vomiting for several weeks. For four days he had had diplopia and sometimes the right eye had crossed.

My diagnosis was paresis of the externus O.D.

Ophthalmometer gave As 0.75 B vertl. R.&L.

Ophthalmoscope.—Normal fundi (examined with and without dilatation of the pupil).

O.D. V.=19/24 (Hm 0.5).

O.S. ditto.

January 31st.—Ophthalmoscope gave both disc-margins blurred and retinal vessels slightly tortuous. Sent the patient to Dr. F. R. Fry, who reported absence of knee jerk and cracked-pot sound on percussion over coronal suture. He prescribed hydrarg. chlorid. corrosiv. gr. 1/24 t.i.d.

February 2nd.—O.D. V.=19/150, disc much more swollen.

O.S. V.=19/24, ophthalmoscope gives no change.

February 4th.—O.D. V.=19/30+.

O.S. V.=19/30. Discs look alike.

February 5th.—O.D. V.=19/19.

O.S. V.=19/60. But there is no more swelling in the one than in the other.

13th.—V.=19/24 R. or L. Ophthalmoscope gives slight change for the better if there is any difference in appearance.

Dr. Fry allowed patient to be treated at home with mercury inunctions.

April 2nd.—O.D. V.=19/24.

O.S. V.=19/19.

Ophthalmoscope gives almost normal discs with very light blurring at margins.

The treatment was continued and March 9th, 1908, V.=19/21 R. or L. and the ophthalmoscope gave fundi normal in every respect.

1909, March 29th.—O.D. V.=19/15.

O.S. V.=19/12. Fundi normal.

The next case illustrates how the improvement of the color-field influenced me to advise against immediate operation, in

spite of diminution in central vision and because of the wretched general condition of the patient:

Geo. R. A., 20 years old, came to me January 9th, 1909, on account of headaches. He has always been "delicate." Since the first part of October, 1908, had had violent headaches preceded by a huge appetite and followed by nausea. His left eye had crossed since he was four years old. His home physician had diagnosticated diabetes and the physician who sent him to me found nothing except anæmia. Patient was extremely nervous and irritable and easily fatigued, and presented a pitiable appearance. With his old glasses, O.D.+2. Sph. V.=19/30. Not improved by any addition. O.S. +2 Sph.+2. cyl. ax.—60° V.=19/75. Not improved.

Pupils large and reacted very sluggishly.

Ophthalmometer gave O.D. As 0.5 M vertl. O.S. As 1.75 M —15.

The patient was too uncontrollable to obtain a chart of his fields.

Ophthalmoscope gave œdema of both nerve-heads. O.S. the most marked, but neither of sufficient intensity to designate the condition as choked disc. The case was referred to Dr. Fry for neurological examination and advised to remain for immediate treatment, which advice was rejected.

Dr. Fahlen's report of urine examination was:

24 hrs.—amber, cloudy—alkaline—1015.

Albumin—very faint trace—sugar none.

Morning—amber — cloudy — alkaline— 1014 — albumin none, sugar none.

Sed. Detritus—Ammonium urate crystals. No casts found (decomposition?). January 23rd, 1909.

He returned January 19th (after ten days) prepared to remain because of diminishing vision.

O.D. with glass V.=19/60. (Several trials.)

O.S. with glass V.=19/120. Later V.=19/75.

Without glass, O.D. V.=19/75. O.S. V.=19/150. His field of vision was as illustrated next page.

The patient walked much more vigorously, pupils reacted more readily, but the vision of O.D., the non-crossing eye, was diminished. He now reported rather vaguely that two years ago he was drowsy all spring and toward the end of that period he did not sleep for several nights.

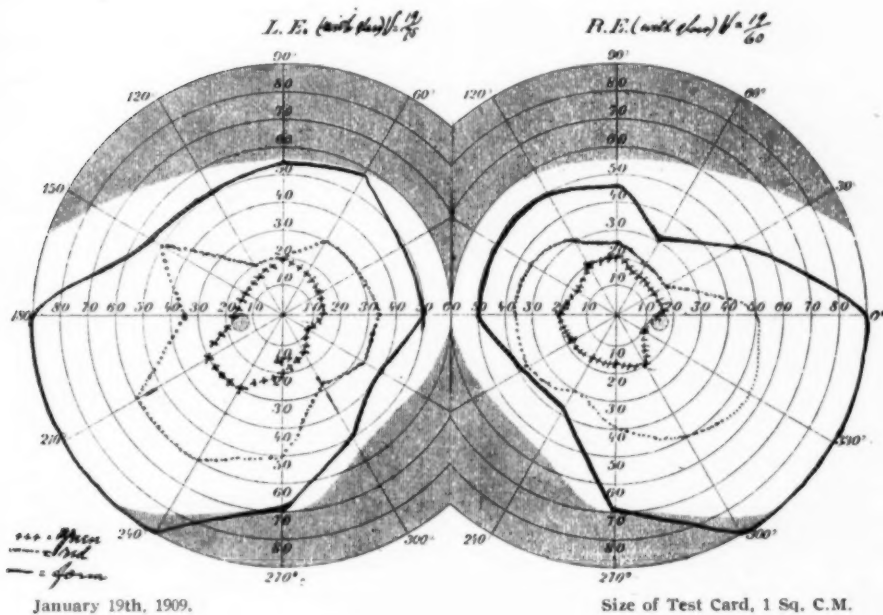
Ophthalmoscope gave œdema of disc O.D. as great as that of

disc O.S. and the veins of both retinae about twice the size of the arteries. In addition there was a small fresh hæmorrhage from the superior nasal vein. Patient was sent to St. Luke's Hospital, where Dr. Fry prescribed dorsal inunctions of mercury, with rubbing for thirty minutes daily, and tonic treatment of elixir of iron, quinine and strychnine t.i.d.

20th.—O.D. with glass V.=20/75+.

O.S. with glass V.=20/96+. Ophthalmoscope gives no change.

23rd.—No change in either vision or ophthalmoscopic appearance.



27th.—O.D. with glass V.=20/75. Slightly worse.

O.S. with glass V.=20/75. Improvement in the worse eye.

Pupils react more readily and patient feels better (no headache).

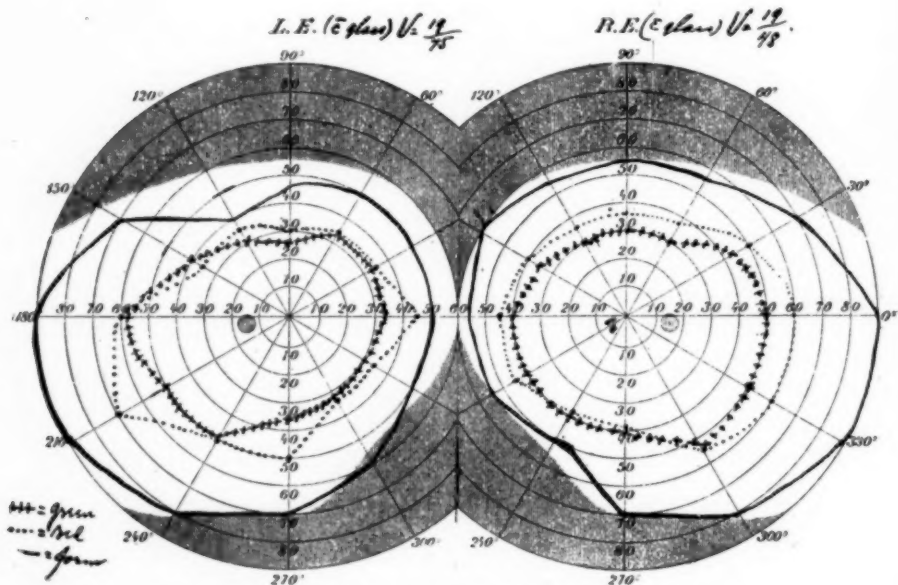
Ophthalmoscope O.D. œdema now more marked than in O.S. Vertical vessel on disc best seen with +6. lens and on fundus with +2. The relation in O.S. is +5. to +2.

Atropia was used right and left after which with glasses O.D. V.=20/75. O.S. V.=20/120; but on the 28th (following day)

with glasses O.D. V.=20/150; O.S. V.=20/120. The left (crossing) eye now sees better than the right. The hæmorrhage of the 19th has disappeared. The œdema seems the same as yesterday.

29th.—With glasses O.D. V.=20/120+. O. S. V.=20/96. Improvement in vision and also ophthalmoscopically.

January 30th.—O.D. with +3. Sph. V.=20/75. O.S. with glass V.=20/75. The relation of the summit of the swelling to plane of the retina is as 4 to 2, and the veins are  $1\frac{1}{2}$  the size of the arteries. Marked improvement. Dr. Fry prescribed in addition to inunctions the sodium iodide, gr. x, t.i.d. (Vid. fields of vision.)



January 30th, 1909—Decision to Operate if Fields were not Improved.  
Size of Test Card, 1 Sq. C.M. Operation Postponed.

February 3rd.—O.D. V.=19/96 (poor light at 5 p.m.). O.S. ditto.

Ophthalmoscope gives a swelling of 2 D, edge of papilla faintly visible through reduced œdema.

5th.—O.D. with +3. Sph. V.=19/75. O.S. V.=19/75 with old glass +1 Sph.

œdema is becoming less especially in O.S. Patient uses O.S. now and strabismus becomes practically nil (i.e., patient uses both eyes in fixation).

February 8th.—Pupils react better than when first seen. Discs



are less swollen so that their margins are faintly visible with indirect method. Vid. fields.

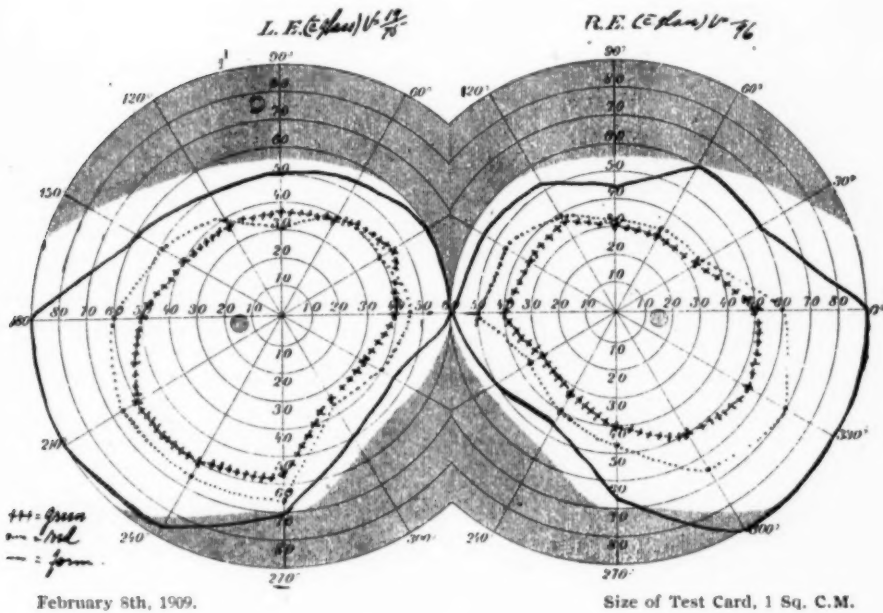
Dr. Fry stopped tonic elixir and substituted strychn. sulph. gr. 1/30 t.i.d.

10th.—V.= as 5th inst., and cedema is decreasing for the first time.

12th.—Cedema markedly less O.D. than O.S.

15th.—O.D. with +3. Sph. V.=19/75. O.S. with glass +7. Sph. V.=19/75.

Ophthalmoscope much less cedema R. and L.



February 23rd.—O.D. with +3. Sph. V.=19/75. with +0.5 cyl. added V.=19/60.

O.S. with +3.25 Sph. +1.5 cyl. ax. 80 V.=19/75.

Therefore R +3. Sph. +0.5 cyl. ax. 100°.

O.S. +3.25 Sph. +1.5 cyl. ax. 80°.

Later with glasses O.D. V.=19/75 to 19/48.

O.S. V.=19/75.

24th—O.D. V.=19/75 +, at last again better than that of O.S.

O.S. V.=19/75.

25th.—Glasses correct. With them O.D. V.=19/75 to 19/48.  
O.S. V.=19/75.

27th.—O.D. V.=19/75 R.&L.

The patient is now having the daily thirty-minute dorsal inunction; also strychn. sulph. gr. 1/30 and iodide gr. xv t.i.d.

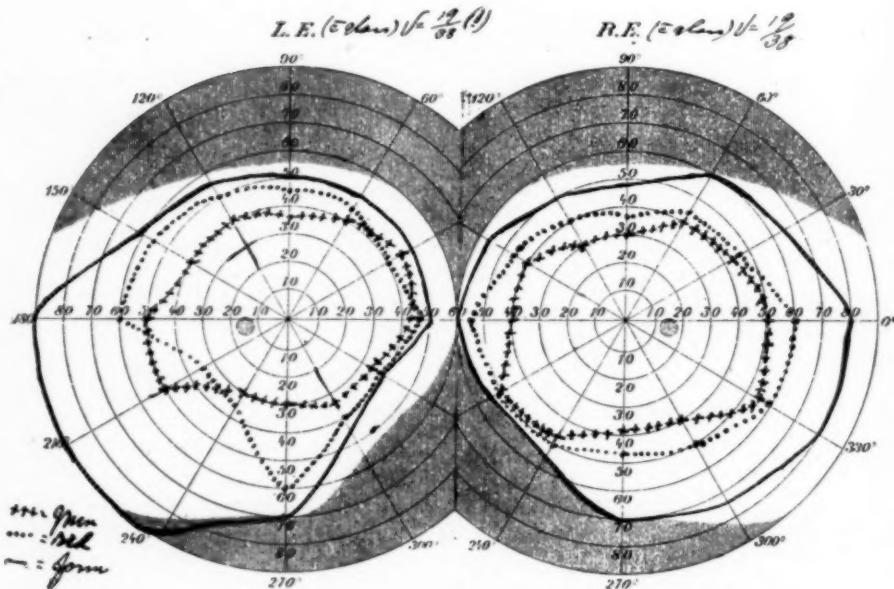
March 1st.—O.D. with glass V.=19/60.

O.S. with glass V.=19/75.

Ophthalmoscope almost normal R.&L.

March 6th.—O.D. with glass V.=19/60+.

O.S. with glass V.=19/75+.



March 9th, 1909.

Size of Test Card, 1 Sq. C.M.

March 9th.—O.D. with glass V.=19/48+.

O.S. with glass V.=19/75. Vid. fields.

March 12.—O.D. with glasses V.=19/48 to 19/30.

O.S. with glasses V.=19/75+.

The patient goes home for two weeks, continuing the inunctions, iodide and tonic treatment.

March 31st.—O.D. with glasses V.=19/48+.

O.S. with glasses V.=19/75. Vid. fields.

Ophthalmoscope gives disc margin O.D. still slightly blurred at upper temporal side.

April 27th.—Several days ago, the patient's mother found him



standing unconscious. He was put to bed and recovered in 24 hours. He now feels better than he has felt within the past year.

O.D. with glass V.=19/38+.

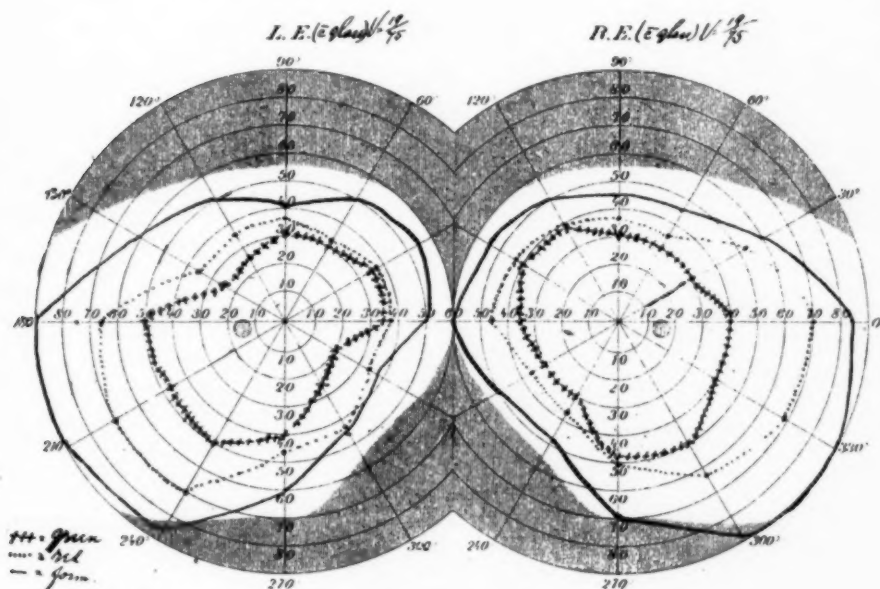
O.S. with glass V.=19/38. Vid. fields.

The fundus of O.D. is almost normal, but that of O.S. is still somewhat blurred.

June 2nd.—Dr. Fry reports that there are no pressure symptoms whatever.

O.D. V=10/120 or 19/240 (?).

O.S. V.=19/48+. Fields about as April 27th.



April 27th, 1909.

Ophthalmoscope gives vessels of normal size. The disc of O.D., slightly œdematous and pale at the inferior temporal quadrant. No demonstrable scotomata.

To recapitulate, this was a case where a decompression would have been indicated with the failing of vision, demonstrable on his return, January 19th, but in which the physical condition of the patient made it necessary to postpone an operation as long as possible; and then, when we had decided to operate January 30th, the field of vision told us that the nerve fibres had begun to recover in spite of the continued diminution of central vision and we therefore again resolved to save the patient from the

shock of an operation. As vision improved the patient became stronger and he was permitted to receive treatment at home with the reservation that he should return immediately if anything untoward should occur. This permission was given only because of the mental condition of the patient and the fact that his parents were more than willing to take the responsibility of the case.

June 15th.—The patient has again been under our supervision for ten days at St. Luke's Hospital, receiving dorsal inunctions and strychnine sulphate gr. 1/30 twice and gr. 1/20 once daily.

His fields remain about the same.

O.D. with glass V.=19/38+.

O.S. with glass V.=19/30+.

The vision of O.S., which had crossed since the patient was four years old, is now better than that of O.D. and the eye is almost always straight.

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#### OCULAR MANIFESTATIONS OF HYSTERIA.

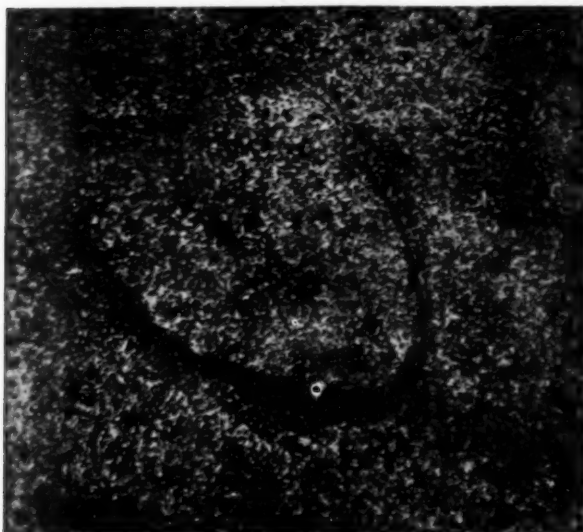
W. H. Dudley (*Southern California Practitioner*, March, 1909,) discusses, among the ocular manifestations of hysteria, first, the anæsthesias, chief of which are (a) loss of sensation in the eyelids, conjunctiva and cornea; (b) concentric limitation of the field for light and color; (c) amblyopia, achromatopsia and the so-called inversion of the color fields. Second, disturbances of accommodation and pupil reaction, the far and near points approaching each other and may blend. Frequently, in connection with this, exists spastic convergence, making the diagnosis practically certain. Cycloplegia alone or with mydriasis, in the absence of any known cause, is very significant. These conditions must be sought as they are likely to be overlooked in a cursory examination. Since many other conditions may be imitated in this affection it is very essential that the physician be constantly alert.

NOTE ON A POSSIBLE ANATOMICAL EXPLANATION  
OF THE NATURE OF THE SO-CALLED ANGIOID  
STREAKS IN THE RETINA.

BY ADOLF ALT, M.D.,  
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It seems to be generally accepted that the so-called angioid streaks in the retina are due to a slight elevation, a narrow fold, of retina which is but little raised above the level of the surrounding parts and which in turn may be caused by a small hæmorrhage or a non-hæmorrhagic exudation.

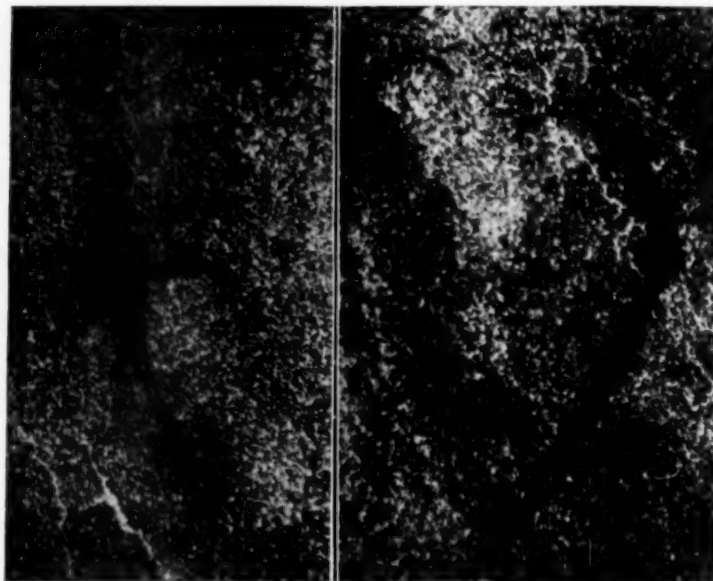
I have never been able to get an eye for examination in



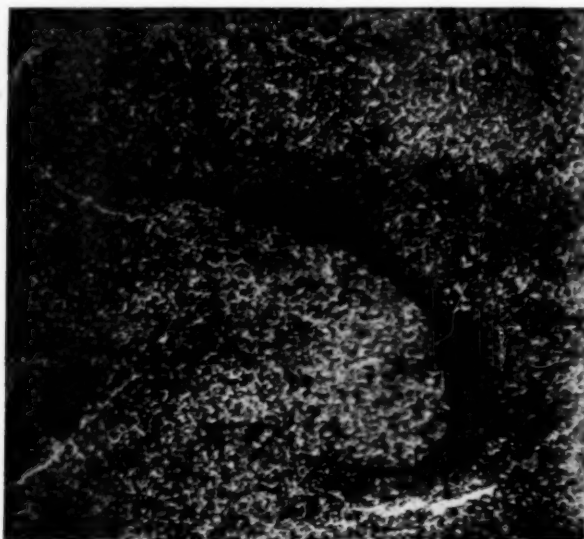
which the ophthalmoscopic diagnosis of angioid streaks had in vivo been made. But, I have a number of times come across conditions as shown by the illustrations accompanying these notes which, it seems to me, may well be recognized as the anatomical substratum of angioid streaks.

The specimens from which I took these photographs come from eyes with old choroiditic changes in which I removed a part of the retina to study the conditions of the pigmented epithelium. In doing so I found these streaks which are represented by folds of pigment epithelium cells slightly raised by a

small amount of exudation. The optical appearance when looking down on such a fold is a lighter line bordered by a darker



one on each side where the raised epithelium appears naturally darker as if there were several superposed layers.



I am sorry I do not happen to have any sections through such streaks with the retina in place. This is the reason I have not previously reported these findings, although they date back a good many years. While I am not in a position to state definitely that here we have to deal undoubtedly with angioid streaks, yet, it seems to me that the conditions described and depicted here may well give their correct anatomical explanation.

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BILATERAL OPTIC NERVE DISTURBANCES WITH  
STEEPLE-SHAPED SKULL.

J. Hirschberg and E. Grunmach (*Berliner Klinische Wochenschrift*, Feb. 1, 1909) discuss the relation of "steeple skull" to optic nerve disturbances. Hirschberg reports one case of poor vision, due, he believes, to this deformity in the skull, and states that he has seen seven cases of this kind. He refers to the experience of Meltzer who has reported twenty cases of congenital blindness in persons having such skulls. The Roentgen findings of some typical cases are given by Grunmach, who calls attention to the great width of the sella turcica and other deformities caused by the early craniostenosis. In one case the skiagram showed the sella turcica to be twice the normal width. This would explain the optic nerve condition. He finds that these optic nerve disturbances occur in cases of oxycephalus but not in brachycephalus.

DIPHTherITIC CONJUNCTIVITIS FOLLOWING  
MEASLES.

E. Weill and G. Moriquand (*Arch. de Med. des Enfants*, Feb., 1909) report five cases of diphtheritic conjunctivitis following measles, illustrating two types of this disease. The one comes on ten, twenty or thirty days after the eruption has subsided, while it may involve the cornea and even cause perforation, yet there are no fatalities in any case and there may be complete recovery of the eye. In the other class the conjunctivitis comes on during the eruption or immediately after its subsidence and regardless of serotherapy or any other treatment causes perforation of the cornea and death of the patient.

SOME NOTES AND OBSERVATIONS ON THE OPERATION OF THE EXTRACTION OF CATARACT IN THE LENTICULAR CAPSULE.\*

BASED UPON THREE YEARS' EXPERIENCE OF THE OPERATIONS AT SMITH'S CLINIQUE AT JULLUNDUR IN THE PUNJAB.

BY CAPT. W. E. McKECHNIE, M.B., CH.B.,  
Indian Medical Service, Jullundur, Punjab.

Smith of Jullundur has brought the operation of extraction of cataract in the capsule to a very high pitch of excellence. His experience now embraces nearly 20,000 cases; such an experience of an operation, I venture to say, has hitherto been unparalleled in the history of ophthalmic surgery. And it is all the more remarkable in that it is the experience of only one decade. Smith began practising the operation as a routine in 1899.

The enormous number of patients who come to Smith to be operated on for cataract affords, to my mind, a reliable index as to the value of the operation. Granted that cataract is very common, comparatively speaking, in the Punjab, this fact will not account for the great number of operations done by Smith in a year, amounting as they do to over 2,000. No other operator in the Punjab or elsewhere can show figures anything like as large: nor can it be explained on the ground of want of skill in the ordinary operation on the part of the other surgeons in the Punjab. There are and have been operators of great skill in this Province. Colonel Perry has been Professor of Surgery at the capital of the Province for 55 years and has enjoyed a great reputation amongst the people as a surgeon. I have myself seen him do the ordinary operation for cataract, and it could not have been better done.

Smith did not begin to take a phenomenal place as a busy operator till, having worked out the lines of the operation in a satisfactory manner, he adopted extraction in the capsule as his routine procedure. The result is that Jullundur is the Mecca of sufferers from cataract.

Smith has no extraneous advantages. Jullundur is one of the smaller and poorer townships or rather villages, of a poor country. It is on a single line of railway with the mountain wastes

\*The three papers on the Smith extraction, read at the Bombay Medical Congress, February, 1909, and published in the *Antiseptic*, (Madras), appear of such great interest at the present time, that we take the liberty of reprinting them for the benefit of our readers.



of the Himalayas to the northeast and the deserts of Sind to the west. On the railway to the north are the important centres of Lahore and Amritsar: whilst to the south is Delhi, once the capital of India. Were patients from a distance in search of important centres they would stop at these places and not leave the train at Jullundur.

The hospital is small and poorly equipped, being only intended for local needs. It falls so far short of the standard we are accustomed to in Europe as to be hardly conceivable by a European surgeon. The buildings he might think were those of a farm. The staff he would find to consist of Smith himself assisted by the following natives: an assistant surgeon, a hospital assistant, and a few dressers. The staff, in fact, is not as large as that of one ward of the Edinburgh Royal Infirmary, whilst the number of patients at one time under treatment in the hospital for major operations on the eye is frequently as large as 450.

These facts are important because they indicate that the immediate results of the operation must be good. Were many of the patients to require attention daily, or even as seldom as twice a week, the organization would break down; the staff would be paralyzed by overwork.

As a matter of fact the cataract cases are operated upon as soon as they come to the hospital in the morning. There is no preliminary treatment. There are two tables in the operating room and while one patient is being operated on, another is being bandaged up and carried away. The great majority of them are not dressed again till the eighth day, and receive their discharge on that day. Thus there is a minimum of dressing.

The assistant surgeon on his daily rounds finds out any case suffering from indications of post-operative complication and attends to him.

The dieting is the simple food of the people sold to the patients and the friends who look after them by a man from the bazaar. The very poor get a ticket entitling them to get food at the hospital expense. Only about 3 per cent. get free diet. All the nursing is done by the friends of the patient.

The fact, then, that under such conditions, these same patients and their friends, having left the hospital, are so satisfied with the result that they in their turn send their friends to the same place in such astonishing numbers, shows, to my mind, that the operation is emphatically a good one, and that its after-results are better than those hitherto attained by any other operator in the

Punjab. And when I say any other operator in the Punjab, I might just as well say any other operator in the world, for I do not think that operators on cataract are anywhere else more experienced.

In view of these facts any *a priori* reasoning designed to show that the after-results of the operation must be bad may be disregarded; and the gloomy prognostications are, moreover, disproved by the excellent after-results which have been noted by myself and other in-patients operated on by Smith from one to six years previously. The usual appearance is that of a clear black pupil and a brilliant eye; and vision with correcting glasses is usually 6/6.

Smith's fame amongst these poor and ignorant people extends a long way. At his hospital I have seen Afghans from Cabul, men from the seacoast of Karachi, from the wilds of the Himalayas, the desert plains of Sind, and the more fertile regions of the Ganges. And this fame has all been attained by a knowledge of how to use a couple of blunt hooks in the extraction of cataract.

Again, it is interesting to note that there is no selection of cases. Indeed a European surgeon might well be appalled by the unfavorable condition of many of the eyes operated upon. And there is no doubt, did circumstances permit, that many of the cases would receive preliminary treatment if it could be given to them. But for several reasons, in Smith's practice such treatment cannot be given.

Eyes which offer any hope of vision are operated on, having regard to the principle that some vision is better than none at all. The following classes of eyes are operated upon:—

Eyes with old trachoma and blepharitis; glaucomatous eyes; eyes whose lenses have been couched and have a consequent atrophy of the retina and night blindness; eyes with iris adherent to the lens; and eyes in every stage of cataractous degeneration from the first hazy beginnings to complete atrophy. If both eyes are cataractous, both are done at the same sitting.

Combining these unfavorable conditions with the great popularity of the operation there follows but one conclusion and that is that in Smith's hands it is an eminently sound one and the operation of choice.

If we grant this it comes to be a question whether it is Smith and he alone who can do the operation. The operation would not be of much use to the progress of the surgical art if only

one man could do it. And I may here state without preamble that there is no jugglery about it. It would be hopeless for the ordinary man to attempt to imitate a Leoncavallo. None may aspire to play billiards like Roberts; to sing like a Caruso or a DeRetzke; to play the violin like Pagannini; or to walk the tight-rope with the assurance of Blondin. But Smith's performance is comparable to none of these. It does not require a special genius. What Smith can do others may do also, provided they are properly taught and can get a sufficient amount of practice. The ordinary man cannot hope to quite attain Smith's skill because he will not be able to get so much practice or experience as Smith has had. But with an experience of about two hundred operations he will attain sufficient skill for practical purpose. A beginner must have good manual dexterity, as any one professing to be an ophthalmic surgeon should have; and he should be taught how to do the operation in actual practice by one who can do it well himself.

I am speaking from personal experience, because I have been taught to do the operation by Smith himself, who has kindly allowed me to do over 500 operations under his personal supervision, and who has taught me every detail to be learned in the manipulation of the various kinds of eyes. I have attended Smith's clinique during the last three years.

Prior to this I had occasionally attempted the operation, but with indifferent success, as I did not know how to do it. The first extraction in the capsule I ever saw done was done by myself, or rather by the patient. It was one of my early operations, and was intended to be done in the usual way with capsulotomy. When I had made the incision probably none too skilfully, the patient, an old woman, powerfully screwed up her eye and delivered the lens neatly upon her cheek. There was no prolapse of iris nor escape of vitreous; the pupil was round and small and central and jet black. The wound healed rapidly and without any complication, and the result was what one might call ideal.

Pleased with this first extraction in the capsule I endeavored to repeat the performance. Sometimes I was successful, but rather oftener I think I made a hash of it. I either burst the capsule or I had to do capsulotomy to avoid using what I considered to be unjustifiable force; or I lost vitreous and had to shut up the eye without enquiring too closely into the position of the iris.

When, three years ago, I first saw Smith operate, I realized that I had not known how to do the operation. I watched Smith operating for a long time and studied his methods as closely as I could. But when I went back to my own hospital and tried to do the operation I found somewhat to my disappointment and astonishment that I was not much better at it than I was before. When I saw Smith doing it, it all seemed simple and easy. When I tried it myself all sorts of distressing things used to happen.

An accomplished rider of the *haute école* will make his horse do all manner of things, such as cantering on three legs, without the means by which he does it being very visible to the spectator. The uninitiated might imagine that the horse was performing its evolutions of its own accord. And anyhow it appears to him as if he could ride the horse quite easily and probably make it do a lot of its tricks himself. The best way to disillusion such a one is to mount him on the horse. The erstwhile docile and obedient animal may very likely turn into a lion rampant. So with Smith's operation. Seeming simple in the hands of an expert, it may be exceedingly difficult if not impossible in the hands of the uninitiated, who is not aware of, or who does not practise, all the little aids which make the operation simple and successful.

I used to watch lens after lens being extracted, entire in its capsule, smooth and glistening: some mature and ripe, some half ripe, others only just beginning to be opaque, and a few the dense black cataracts; some with big and some with small nuclei, some hard and thin, others round and soft and fat. Out they came and into the bottle, lens after lens, without a hitch.

Then Smith began to teach me by allowing me to operate myself under his direction. It is the only way to learn; and I shall always rest under a deep debt of gratitude to Smith for his kindness in teaching me, and for the pains he has taken to render me proficient.

The first thing of which I became aware was that it was much easier to operate in Smith's hospital than in my own. The reason was that the assistant knew exactly what to do. The first lesson, then, is that the assistant is almost as important as the operator. Next I found that there was something to learn at almost every stage of the operation. There were many little things which I had failed to notice despite the large number of times I had seen Smith doing the operation. These little things are important in that they conduce to a smooth and even operation without complications and distractions, and hence lead to a good result.

Smith's technique is such that it may be said to avoid all complications, and in this lies the secret of its success. The eye is quickly and gently dealt with, and it shows its gratitude by its good behavior both at the time of the operation and afterwards.

I have now done over 500 extractions in the capsule as a pupil of Smith's. Smith has also taught three other surgeons. The two whom I know and myself can do the operation with ease and confidence and an almost uniform success. Of the other operator, Knapp, of America, I cannot speak from personal knowledge.

The operation, then, can be done by others besides Smith; and the failure of those ophthalmic surgeons who have tried to do the operation and have not met with success is due to their faults of technique and not to the fault of the operation. There is a great deal to learn as to *how* to do the operation and I can fully endorse Smith's claim that he has evolved the technique of the operation.

As regards the assistant, in his case also a certain amount of practice is required before he can do the work efficiently. His chief duty is the holding of the eye-lid retractor. Simple as this duty may seem it is not so simple as it looks; and it took me several weeks of daily practice at operations before I became really good at it. The holding of the eye-lid properly is of the very greatest importance as on it depends the safety of the operation.

Such then is an account of Smith and his operation. I speak from personal observation and experience of Smith's practice at Jullundur during the last three years: and Smith has very kindly allowed me to do about 500 extractions in the capsule on his patients, and has thoroughly taught me how to do it. Having been put in the right way by a master, I have had a very gratifying success, and a relative immunity from disaster or complications. My own cases, unlike Smith's, have been more or less selected ones, as Smith himself has always done the cases where there was glaucoma or a previous dislocation of the lens. Of late I have done all other kinds of cases.

One of my early cases was lost from suppuration; both eyes were lost. I attribute this to want of skill causing me to soil the instruments on the patient's lids or other parts. In a second case I failed to extract the lens. During the extraction the vitreous presented and I let go too suddenly. The lens, which was half out, fell back plump into the vitreous and I could not get it



out again. I have had no serious escape of vitreous: and my total percentage of escape of vitreous is about 6 per cent. The only drawback which I have noted from this complication is that owing to the toilet of the wound being interfered with the iris has rather frequently been caught in the wound in these cases. With the above exceptions my results have been good, and much better than I could have hoped to attain by any other operation.

I wish to absolutely endorse what Smith says as to the advantages of his operation; and I would lay it down that—except in patients under 25 years of age—it is the best operation for nearly all cataracts; and that it is the operation of election in immature cataract; and that the time of election for the performance of the operation of cataract extraction is when the cataract is immature, because then the operation of extraction of cataract in the capsule is easiest to perform and is then least likely to be fraught with complications either immediate or remote.

The general acceptance of such a doctrine will mean a very great change in the present methods of treating cataract; and it will mark a very great advance.

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#### MALARIAL BLINDNESS.

T. S. Davis (*New Orleans Med. and Surg. Jour.*, Jan., 1909) reports six cases of blindness due to infection with the estivo-autumnal parasite, the tertian form being the one usually present. The cause of the blindness may be optic neuritis, retinal hæmorrhage, hæmorrhage into the vitreous, effusion into the vitreous or a retinochorioiditis; and the blindness may pass away as the fever subsides or may persist on account of atrophy of the optic nerve. The malarial cachexia need not necessarily be present for the eye trouble to occur. The blood examination and the ophthalmoscope determine the diagnosis. It is differentiated from quinin amaurosis by the appearance of the papilla, the latter being greatly congested in this condition while in quinin amaurosis there is marked ischemia. The prognosis is good and the hypodermic use of quinin is advised.



## ABSTRACTS FROM MEDICAL LITERATURE

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### AN ATTEMPT TO DETERMINE THE NORMAL RANGE OF ACCOMMODATION AT VARIOUS AGES— BEING A REVISION OF DONDERS' EXPERIMENTS.

Alexander Duane (*Trans. Am. Oph. Soc.*, 1908) has carefully tested the range of accommodation in about four hundred patients, being careful to include only such patients whose acuity of vision was such that they could make the fine distinctions required in the test, and also to have uniform illumination and to employ the same sort of test-object. He offers the following tentative conclusions:

1. The findings as regards the absolute range of accommodation and consequently the shape of the presbyopic curve differ somewhat from those got by Donders.

2. As a particular exception, the accommodation in childhood and youth seems to be not so high as he stated. I have rarely found a range much above 14 D (11 D if the near point is measured from the cornea) in children between 8 and 13.

3. The range does not apparently seem to diminish much between the ages of 10 and 15. It is even possible that it may rise, and that the maximum accommodation is found somewhere about the age of 16 or 18. But many more observations than we have would be required to prove or disprove this.

4. The accommodation does not decrease year after year by any steady sweep, but at some periods of life seems to remain about the same for years together and then descend rapidly.

5. Two periods of apparent stasis are those from 25 to 30 and again from 35 to 40. To make sure of this point, however, many more observations would be required than we have in hand.

6. Much more certainly demonstrated seems to be the decided and rather abrupt plunge that begins at the age of 40 and continues uninterrupted to the age of 51. The accommodation during these eleven years falls from 5.9 to 1.50 D, a drop of 4.4 D, while in the preceding eleven years it falls 3.4 D.

7. After 51 the accommodation remains nearly constant, diminishing not more than 0.50 D in ten years.

8. The average, minimum, and mean ranges that we have found at the different ages (excluding the cases that were probably distinctly sub-normal) are as follows:

Age	Mean	Range		Donders' Average
		Low	High	
10	14.0	10.0	16.5	18.0
15	13.0	9.7	16.0	15.0
20	10.7	7.5	14.0	11.8
25	9.6	8.2	12.0	9.7
30	8.8	6.3	10.4	7.8
35	7.0	6.5	8.0	6.0
40	5.9	4.9	6.7	4.8
45	3.8	1.3	5.0	3.7
50	1.8	0.7	2.3	2.6
55	1.3	1.2	2.0	2.0
60	1.2	1.2	1.5	1.5

9. Owing to the variations shown by the same case from time to time, a single determination of the accommodative power is of little value. This is particularly so if the value found is subnormal or if the proper conditions of examination have not been fulfilled.

10. Some peculiarities may be mentioned.

(a) The highest range noted (17 D) was found in a patient of 17.

(b) Three at the age of 23 had an accommodation of 13 to 14 D.

(c) One patient of 48 had an accommodation of 6 D in one eye and 7 D in the other. This was associated with a marked (probably spastic) miosis, paresis of the abducens, and some other symptoms indicative of brain irritation. I regarded the condition as a true spasm of accommodation. It is not unlikely, however, that it was an instance of the spurious accommodation, which Hess regards as so frequent in presbyopes. That is, the patient on account of her miosis was able to see objects at close range without really accommodating for them.

11. Cases of unequal accommodative power—not meaning by this cases in which the two eyes accommodated unequally when working together, but cases in which the maximum power of one eye was persistently higher than that of its fellow when tested by itself, were not very uncommon.

12. Corrected myopes frequently showed a surprisingly high

power of accommodation. Thus a patient of 21 with a myopia of 3 D had a range of 12 D, a patient of 23 with a myopia of 3.50 D a range of 14 D, a patient of 25 with a myopia of 7 D a range of 11 D, and a patient of 18 with a myopia of 13 D. a range of 12 D.

#### EXTRACTION OF CATARACT WITH A LANCE-SHAPED KNIFE.

J. Herbert Claiborne (*Trans. Am. Oph. Soc.*, 1908), in order to avoid the objections and disadvantages found in the use of the Graefe knife for making the incision for cataract extraction, had a special lance-shaped knife or keratome made, with a base of 14 mm. and a length of 10 mm. to the base line. He has used this several times and believes it well adapted for use in the extraction of the different kinds of cataract, but "particularly adapted to soft cataract, to Morgagnian cataract, to artificially matured cataract or to cases of glaucoma in which it is desired to make an exceptionally large coloboma." He states the following disadvantages of the Graefe knife:

1. The necessity of counter-puncture.
2. The difficulty of making counter-puncture correspond with puncture.
3. The necessity of a sawing movement to finish the section.
4. The necessity of making puncture, counter-puncture and section at an angle to the support of the fixation forceps.
5. The difficulty of finishing the section at exactly the point intended.
6. The loss of aqueous and consequent exhaustion of anterior chamber after counter-puncture during the performance of the section.
7. The falling of the iris before the knife.
8. Imperfect apposition of lips of wound on account of its ragged and serrated character; increase of liability to suppuration by reason of raggedness of wound; tardy healing; increase of post-operative astigmatism.
9. Necessity of ambidexterity, in order to operate in each eye equally well.
10. Necessity of adjusting size of section.
11. Danger of prolapse of vitreous when section is too large or ends too far back of sclero-corneal margin.
12. Length of time required.

Similarly, the advantages of a section made by the right kind of a keratome are thus stated:

1. There is no counter-puncture.
2. The section is made in the plane of the support furnished by the fixation forceps.
3. The wound is a stab-wound, and by virtue of that fact is smooth; no sawing motion is employed.
4. The section is practically finished by shoving the knife home.
5. There is no loss of aqueous while the section is being made, because the knife increases in thickness from the apex to the base, and the further it is shoved in the tighter it stops the wound.
6. The iris is not so apt to prolapse on withdrawing the knife, because the broad back of the knife holds it in place.
7. The iris cannot fall before the knife from loss of aqueous because no aqueous is lost during the section on account of the shape of the knife.
8. Perfect apposition of lips of wound by virtue of its smoothness; rapid healing; less post-operative astigmatism.
9. Use of right hand for both eyes.
10. If the knife is entered properly and shoved home, the section is bound to be correct; it automatically commands success.
11. Less danger of prolapse of vitreous, because of the support furnished by the broad back of the knife.
12. Diminished time.

He emphasizes the advantage of diminished time and says the incision can be made with the keratome in three seconds, thus lessening the danger of this part of the operation.

#### EXCISION OF THE LACRIMAL SAC AS A RADICAL CURE FOR CHRONIC INFLAMMATORY PROCESSES THEREOF.

Llewellyn Williamson (*Jour. Mo. State Med. Ass.*, March, 1909) advocates the removal of the lacrimal sac, first, where trouble arises in it from loss of tone in its walls; second, in cases due to constriction in the nasal duct not of a temporary character; third, in cases of blennorrhœa in which an operation is intended on the ball; fourth, in all cases which have resisted, for some time, proper conservative treatment. He deprecates the use of probes in the treatment of inflammations of the lacrimal sac, except where strictures are present as a result of bands of fibrous

tissue. These are often the result of previous improper probing. Ordinary cases of lacrimal sac inflammations are much better treated by syringing out the sac repeatedly and the treatment of any nasal condition which may tend to obstruct the duct. While the fluid may not pass down through the nasal duct with the first attempt of syringing, usually by repeating the attempt on successive days it will eventually do so. Too much force should not be used in syringing to get the fluid through, as thus the sac may be ruptured and the fluid extravasated into the surrounding tissues. He is also opposed to slitting the canaliculi, as this interferes with the mechanism of drainage.

Williamson believes that while it may be possible to maintain the patency of the duct by repeated probing after slitting the canaliculus, it nevertheless subjects the patient to much pain and the loss of much time and at the same time he is liable to have recurring attacks of inflammation of the sac which may endanger the eye by infecting the cornea after some slight abrasion. Hence he believes it is much better to remove the sac by the radical operation. He prefers the technic of Fuchs' operation which he describes. Fuchs operates under local anæsthesia, as a rule, which is preferable since there is less hæmorrhage, but Williamson has found American patients usually prefer a general anæsthetic.

#### THE TREATMENT OF IMMATURE CATARACT.

Major Henry Smith (*Trans. Am. Oph. Soc.*, 1908) calls attention to the unsatisfactory results frequently obtained by removing immature cataracts by the capsulotomy operation. He discusses some of the procedures employed to mature more rapidly immature cataracts, viz.: 1. Puncturing the lens capsule with a needle. 2. Iridectomy (simple). 3. Iridectomy with massage through the cornea. 4. Iridectomy with direct massage with some form of instrument. The first of these, if it hastens the maturing of the cataract, produces a traumatic cataract which may cause acute glaucoma or may cause acute iritis or iridocyclitis by the lens matter escaping into the anterior chamber. This demands that the cataract be extracted promptly and under very unfavorable circumstances, and the results are usually not nearly so good as when extraction is done on a naturally matured cataract. The other three procedures are, as a rule, of little value in hastening the maturing process. As waiting for

the cataract to mature by nature's process is often very trying to the patient and may mean a great loss to him, Smith advocates very strongly the extraction of the immature cataract in capsule. He finds it as easily and successfully done as extracting the mature cataract in capsule. He has extracted over 17,000 cataracts in capsule and many have been immature, especially during the last few years. He advises the operation as soon as the patient can no longer see to perform his ordinary duties. His description of the operation follows:

The patient and his eye are prepared as for the ordinary operation; atropin is not necessary on account of the exceeding infrequency of iritis following this operation. The operator sits on a stool at the patient's head, the assistant stands beside the operator. The assistant is thus not in the way of the operator.

The sclero-corneal incision is made with the speculum in and includes a little less than half the circumference of the sclero-cornea. I personally prefer the incision finished in the cornea without a conjunctival flap, as the flap is more or less in the way. An iridectomy may or may not be done according to the operator's fancy. The speculum is now removed, the assistant draws down the lower eyelid with the face of his thumb, placed on the skin below it; with his other hand he lifts the upper eyelid forward with a large sized strabismus hook, in his first three fingers, as if he were lifting the contents of the orbit out of the socket, and not lifting it towards the brow, using the ring and little finger of the same hand to draw back the brow and orbicularis muscle. This does not imply any violence on the part of the assistant.

The operator now places the end of a large sized ophthalmic spatula on the left side of the cornea over the junction of the middle and lower third of the lens. He places the end of a large sized blunt pointed strabismus hook over the corresponding position to the right of the spatula. He makes steady pressure backwards towards the optic nerve with this spatula and he makes similar pressure with the strabismus hook, except that in making pressure with his strabismus hook he draws it backward and forward across the cornea. The edge of the lens at the wound will be seen to tilt forwards and the clear vitreous will be seen between it and the scleral margin of the wound. As soon as this occurs, the pressure with the spatula should practically cease and the same stroking movement of the strabismus hook should be continued, its position not being altered on the cornea at first, but the direc-



tion of the pressure exerted through it should be altered gradually more and more in the direction of the wound until it finally folds the cornea beneath the lens; at this stage the lens is delivered. The iris should be replaced if prolapsed. The assistant should then let go the eyelid, and the patient's eye should be dressed up.

#### REFLEX NEUROSES ARISING FROM OCULAR AND NASAL ABNORMITIES.

S. Lewis Ziegler (*N. Y. Med. Jour.*, November 7, 1908,) discusses: 1, Ciliary spasm, or strain from uncorrected ametropia; 2, accommodative effort, whether in youth or old age (presbyopia); 3, muscular imbalance; and 4, painful ciliary scar, or shrunken eyeball, as causes of reflex neuroses. Among the nasal conditions which may produce these neuroses he considers: 1, Pressure contact; 2, hyperæsthesia; and 3, nasal obstruction. These nasal conditions may cause ocular symptoms which the most painstaking refraction and treatment of the eyes will fail to relieve. Hence it is very necessary to differentiate these conditions from ocular disturbances producing similar symptoms. He is inclined to believe that there is a causal relation between pressure contact and heterophoria as he has frequently noticed muscular errors disappear after the removal of pressure contact. Headache, migraine, localized muscular spasms, chorea, minor epilepsy, gastric neuroses, and neurasthenia are discussed and illustrative cases given where all of these diseases have been relieved by the correction of ocular abnormalities in some cases and nasal conditions in others. He concludes that the following salient points should always be borne in mind when searching for the exciting cause of reflex neuroses:

1. The eye and the nose are undoubtedly most important factors in the ætiology of reflex neuroses and should, therefore, be carefully examined and positively excluded before beginning a search for other causes.

2. Ocular and nasal reflexes possess many manifestations in common, which should be carefully differentiated at the earliest possible moment.

3. Eyestrain, whether from ametropia, subnormal accommodation, or muscular imbalance, should be carefully corrected in order to eliminate the eye as a causative factor.

4. An atrophied eyeball, with contracting ciliary scar, should be enucleated.

5. Pressure contact in the nose will always excite some reflex disturbance when any hyperæsthetic area is impinged upon, and should, therefore, be eliminated.

6. Every obstruction to free breathing should be removed.

7. Recurrence of any reflex neurosis demands re-examination and renewed search for the original exciting cause.

#### TOBACCO AMBLYOPIA (FROM CIGARS) IN A WOMAN.

W. S. Franklin (*Col. State Jour. of Med.*, March, 1909,) reports a case of tobacco amblyopia in a Swedish woman, 52 years of age, unmarried. She had been smoking six to eight domestic cigars daily for some time but denied using alcoholic drinks, which statement was accepted by the author. He considers the pathologic changes in the optic nerve are the same whether the poison be tobacco or alcohol, or both, and it is impossible to differentiate between the cases clinically. Reference is made to Martin's opinion that the pupil is contracted in tobacco cases while it is dilated in alcohol cases, but this is not substantiated by Franklin's case as the pupils were moderately dilated. The fact that many more men than women use tobacco and alcohol accounts for the greater number of cases in men rather than any predisposition. While the author considers his case one of pure nicotine neuritis he states that usually in women the amblyopia is due to both alcohol and tobacco. The trouble may follow the use of tobacco in any form. The reduction of the vision, paleness of the temporal side of the nerve, and central scotoma make the diagnosis. The scotomata vary from being only relative for color at first, to absolute depending upon the degree and stage of the neuritis. Complete withdrawal of all tobacco will bring about a cure in a large percentage of the cases.

#### METASTATIC INFLAMMATIONS OF THE EYE.

Parsons (*Bristol Medico-Chi. Jour.*, March, 1909,) discusses inflammations of the eye caused by micro-organisms or their products transmitted to the eye from some other part of the body, through the lymph and blood streams. Transmission by direct continuity is not considered, although where the trouble spreads from the involved meninges of the brain it may be difficult to exclude. The route by the lymph channels is rare. Ocular tuberculosis, gonorrheal iritis, and iritis due to streptococcic septicemia are discussed as illustrations of metastatic involvement of the eye. Chorioidal affections following tubercular

meningitis must be classed as a true metastasis. In the clinical diagnosis of metastatic endophthalmitis conglomerate tubercle of the chorioid is of special importance. Parsons emphasizes the tendency of endogenous bacterial metastases to recover spontaneously, as illustrated by metastatic inflammations of the eye due to pneumococci. This class of eye diseases does not occur so frequently at present as in former years when puerperal fever and pyemia were common. He considers the so called pseudoglioma as an undoubted metastatic inflammation of the eye, and believes that iridocyclitis may at times be due to this form of infection. Foci of infection may be found in pyorrhea alveolaris, infected nasal sinuses and, in women especially, in the generative organs. He believes that the theory of bacterial metastasis is most likely the true one in the case of sympathetic ophthalmia.

#### EXPERIMENTALLY INDUCED CHOKED DISC.

H. Cushing and J. Bordley (*Bulletin Johns Hopkins Hospital*, April, 1909,) summarize their findings in the experiments performed by them to determine the cause of choked disc as follows:

1. The introduction of fluid under tension into the intracranial subdural space will produce an acute œdematous swelling of nerve head and retina—in other words, a choked disc—which can be observed during life with the ophthalmoscope and demonstrated by a study of the tissues after death.
2. Simple digital compression exerted against an area of the dura exposed by a trephine opening, and without the introduction of new fluid under tension, will produce similar lesions.
3. These acute œdemas of the nerve head and retina are associated, under both conditions, with distension of the optic sheath, particularly of its subarachnoid spaces.
4. Venous congestion does not seem capable, without the concomitant action of the fluid under tension in the optic sheath, of producing more than the congestive features of choked disc; in other words, under the conditions of the experiments it failed to occasion any appreciable œdema of the nerve head.
5. Long-continued pressure against a dural defect can lead to retinal hæmorrhages and other clinical, as well as histologic features, which characterize chronic choked disc in man.
6. The introduction between the skull and dura of foreign

bodies which are capable of subsequent increase in size and which possess some elasticity, will closely simulate the action of a new growth, and, placed either above or below the tentorium, will lead to the production of choked disc.

They conclude, therefore, that:

1. The occurrence of the neuroretinal œdema is primarily dependent on the passage of cerebrospinal fluid under tension from the subarachnoid spaces of the interpeduncular region into the vaginal sheath of the optic nerve, and that cerebral decompression often allows the process to subside, owing to a resultant diminution of tension from release of the confined fluid.

2. The experimental work corroborates many of the more recent clinical observations in showing that a choked disc, even of considerable height, may be rapid in its formation, and, provided it has not gone on to the stage of new tissue formation, may rapidly subside; and thus speaks strongly in favor of a mechanical, as opposed to a chemical or inflammatory, origin for the lesion.

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## PROGRAM OF THE INTERNATIONAL CONGRESS OF MEDICINE.

To be held at Budapest, August 29th to September 4th.

### SECTION IX: OPHTHALMOLOGY.

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#### REPORTS.

Angelucci (Naples)—Postoperative, durch Autovergiftungen begünstigte oder entstandene Augenentzündungen.

- Elschnig (Prag)—Infektionsverhütung bei Bulbusoperationen.  
 Goldzieher (Budapest)—Pathologie des Trachoms.  
 Greeff (Berlin)—Zur Aetiologie des Trachoms.  
 Hess (Würzburg)—Über Staar- und Nachstaar-Operationen.  
 Hirschberg (Berlin)—Prophylaxe des Trachoms.  
 Jessop (London)—The serum treatment of diseases of the eye.  
 Kuhnt (Bonn)—Operative Behandlung des Strabismus concomitans.  
 Lagrange (Bordeaux)—Traitement du glaucome chronique.  
 Lapersonne (Paris)—Du rôle des infections, particulièrement de la syphilis, dans la production des lésions de la myopie progressive.  
 Leber (Berlin)—Serodiagnostik der Augenerkrankungen.  
 Morax (Paris)—Etiologie des infections post-opératoires subaiguës et tardives.  
 Römer (Greifswald)—Serumtherapie in der Augenheilkunde.  
 Sulzer (Paris)—La prophylaxie du trachome.  
 Truc (Montpellier)—L'iridectomie et la sclérotomie.  
 Uthhoff (Breslau)—Augensymptome bei den Hypophysisaffectationen und der Akromegalie.  
 Weeks (New York)—Serum and vaccine therapy in ophthalmology.

COMMUNICATIONS.

- Antonelli (Paris)—Pathologie naso-lacrymale dans l'hérédosyphilis.  
 Axenfeld (Freiburg i. Br.)—Blutdruck und intraoculare Tension bei Glaucom.  
 Edridge-Green (London)—Some curious phenomena of vision and color vision.  
 Eversbusch (München)—Thema vorbehalten.  
 Falta (Szeged)—Beitrag zur Trachomtherapie (Instrumentendemonstration).  
 Fejér (Budapest)—Beiträge zum Krankheitsverlaufe und zur Behandlung der Embolie der Centralarterie der Netzhaut.  
 Fukala (Wien)—1° Was ist zu tun, wenn bei Glaukoma nach der Operation sich die Kammer nicht herstellt? 2° Wie soll man den Augapfel bei Star- und Glaukomoperationen vollkommen unempfindlich machen?  
 Genersich (Hódmezövásárhely)—Le collargol contre les supurations cornéennes.

Imre (Hódmezővásárhely)—Neue Operation gegen das Entropium spasticum habituale.

Márquez M. (Madrid)—Sur un nouveau procédé opératoire du distichiasis.

Márquez T. A. (Madrid)—Du chlorhydrate de codéïne dans la thérapeutique oculaire.

Nedden (Essen a. d. R.)—Die Bedeutung der Autocytotoxine für die Entstehung von Augenkrankheiten.

Oliver (Philadelphia)—Transferred ophthalmitis.

Onodi (Budapest)—Das Verhältniss der Nasennebenhöhlen zum Sehnerv und zu den Augennerven.

Paunz (Budapest)—Beiträge zur Mukokele fronto-ethmoidalis.

Possek (Graz)—Zur Aetiologie der Linsentrübungen.

Schmidt-Rimpler (Halle)—Bemerkungen zur Glaukom-Therapie.

Siklóssy (Budapest)—1° Über die Bedingungen der körperlichen Tauglichkeit der Eisenbahnangestellten mit Rücksicht auf das Sehorgan bei deren Aufnahme und bei periodischen Prüfungen; 2° Über die Messenheit der Sehschärfebestimmung.

Vajda (Miskolcz)—Die Bedeutung der Weitsichtigkeit bei den Fabriksarbeitern und Gewerbsmännern.

Vossius (Giessen)—Gesichtsasymmetrien und Strabismus.

Wicherkiewicz (Cracovie)—1° Meine Erfahrungen über die Kammerausspülungen bei Staaroperationen; 2° Sur l'opération des cataractes non-mûres; 3° Über spontane Irisatrophie; 4° Einiges über Anophthalmus congenitus und congenitale Lidysten.